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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,330	08/24/2001	Alfred Kersch	L&L-10078	3872
24131	7590	05/19/2004	EXAMINER	
LERNER AND GREENBERG, PA			FULLER, ERIC B	
P O BOX 2480			ART UNIT	PAPER NUMBER
HOLLYWOOD, FL 33022-2480			1762	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,330

Applicant(s)

KERSCH ET AL.

Examiner

Eric B Fuller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (US 6,159,855) in view of Wang et al. (US 5,871,811) in further view of Tanaka et al. (US 6,039,834).

Vaartstra teaches a process of forming ferroelectric or perovskite films by chemical vapor deposition (column 7, lines 45-55). Water vapor may be used as a reactant gas (column 11, lines 5-10), which reads on applicant's "auxiliary gas". Water has a dipole moment and, according to the applicant's specification on page 10, lines 15-20, has the property required by claim 1. The water vapor is fed by an external supply source that is a storage container (figure 1, ref. 19). The carrier gases, precursor gases, and water vapor are all fed into the reaction chamber through a showerhead (column 12, lines 20-26). The substrate is mounted opposite the showerhead and a pump is used to exhaust the reaction chamber (figure 1, ref. 42, 46). The reference is silent in teaching the distance between the showerhead and the substrate. However, Wang teaches that by having the distance between the

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showerhead and the substrate be less than one centimeter, the reactants are confined to the area between the substrate and the showerhead, which results in increased reaction efficiency, increased rate of reaction, and prevents deposition everywhere except on the wafer. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a distance of less than one centimeter for the separation between the showerhead and the substrate in the process taught by Vaartstra. By doing so, one would reap the benefits of increased reaction efficiency, increased rate of reaction, and preventing deposition everywhere except on the wafer.

The references, collectively, fail to explicitly teach providing a connecting line directly connecting the further gas outlet opening to one of the inlet openings, with a valve in the connecting line for controlling gas flow. However, Tanaka teaches an upgrade for CVD systems (abstract) that has such a configuration (column 15, lines 25-51). The benefit of using such a configuration is so that the CVD apparatus may be self-cleaning by recirculating radicals. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the upgrade taught by Tanaka, and the corresponding configuration, in the process taught by Vaartstra in view of Wang. By doing so, the apparatus may be made self-cleaning.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (US 6,159,855) in view of Wang et al. (US 5,871,811) in further view of Tanaka et al. (US 6,039,834), as applied to claim 1 above, and further in view of Arvidson (US 5,118,485).

Vaartstra, in view of Wang and Tanaka, teaches the limitations of claim 1, as shown above, but fails to teach using a recycle stream with a pump to circulate auxiliary gas from the exit of the chamber to the inlet. However, Arvidson teaches that it is well known to recover unused reactant that has passed through a CVD process and recycle it back to the inlet streams so that there is less waste (column 2, lines 44-68). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to recycle elements of the exhaust in the process taught by Vaartstra, in view of Wang and Tanaka, with the expectation of achieving less waste.

Response to Arguments

Applicant argues that Tanaka teaches that different reactor chambers are connected, thus fails to teach connecting the inlet and outlet openings of one and the same reactor. This is not found convincing. Tanaka teaches in column 15, lines 25-51, that a connection line connects the outlet and inlet of processing chamber (400) of figure 3(b). As there is only one processing chamber in figure 3(b), this is a teaching of connecting the inlet and outlet openings of one and the same reactor.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EBF



TIMOTHY WEEKS
PRIMARY EXAMINER